

Claims

- [c1] A method for making an injection molded plastic article with at least one hollow portion, said method comprising the steps of:
- injecting a quantity of a plastic material into a mold cavity, the quantity of plastic material sufficient to completely fill the mold cavity;
 - packing said plastic material in said mold cavity;
 - injecting a fluid material into said packed plastic material in said mold cavity;
 - increasing the volume of said mold cavity by moving a moveable core member;
 - displacing by said fluid material at least a portion of said plastic material into said increased volume and thereby creating a hollow portion in said plastic material forming said article;
 - allowing the completed plastic article to cool and solidify in the mold cavity;
 - exhausting said fluid material from the hollow portion of the plastic article; and
 - removing the plastic material from the mold cavity.
- [c2] The method as described in claim 1 wherein said fluid

material is a gas.

- [c3] The method as described in claim 1 wherein said plastic article has at least one rib member and said hollow portion is in said rib member.
- [c4] The method as described in claim 1 wherein said quantity of plastic material is injected at a first pressure and said plastic material is packed in said mold cavity at a second pressure greater than said first pressure.
- [c5] The method as described in claim 1 wherein the step of increasing the volume of said mold cavity comprises moving said core member by use of a hydraulic, pneumatic or electric mechanism.
- [c6] A method for making an injection molded plastic article in a mold, said article having a hollow rib member, and said mold having a moveable mold member and a stationary mold member, said method comprising the steps of:
injecting a full shot of plastic material into a mold cavity in the mold, said mold cavity having a first portion forming said rib member on the completed plastic article and said mold having a moveable core member in said moveable mold member and a floating core member in said stationary mold member;

packing said plastic material in said mold cavity;
moving said moveable core member to create a void in the mold in addition to the mold cavity;
injecting a gas into the plastic material in said first portion and displacing still-fluent plastic material in the rib member into said void;
allowing said plastic material to solidify; and
removing said molded plastic article from the mold.

[c7] The method as set forth in claim 6 wherein said molded plastic article is a vehicle door panel, said rib member is a portion of a storage pocket member, and said void is a speaker grill area.

[c8] The method as described in claim 6 wherein said void forms a speaker grill member on said plastic molded article.

[c9] A method for making an injection molded plastic article with at least one hollow portion, said method comprising the steps of:
injecting a first quantity of plastic material into a mold cavity;
injecting a second quantity of plastic material into said mold cavity to pack said plastic material against the walls of said mold cavity;
injecting a gas material into said plastic material;

increasing the volume of said mold cavity by moving a moveable core member positioned in said mold cavity to form a void in said mold cavity;
displacing a portion of said first or second plastic material into the void formerly occupied by said moveable core member; and forming a hollow portion in a pre-specified location in said plastic material;
allowing the plastic material to solidify in said mold cavity; and
removing said plastic material now forming a molded plastic article from said mold cavity.